

REMARKS UNDER 37 CFR § 1.116

Formal Matters

Claims 1-38 are pending after entry of the amendments set forth herein.

Claims 1-38 were examined. Claims 1-38 were rejected.

Claims 1,7,12,24,31 and 37 have been amended to further clarify the recitations therein. Claims 2,13, 25, 32-34 and 38 have been amended to correct minor informalities. It is respectfully submitted that these amendments raise no new issues, but rather serve to further clarify the claim language and to place the instant application into condition for allowance.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

No new matter has been added.

The Office Action

In the Official Action of March 1, 2004, the Examiner rejected claims 1-6, 8-11, 24-27, 31-32 and 37-38 under 35 U.S.C. Section 102(a) as being unpatentable over Zorabedian et al. (U.S. Patent No. 6,526,071 (Application Serial No. 60/152,042)) in view of Goodwin et al. (U.S. Patent No. 5,114,226) or Nerin et al. (U.S. Patent No. 6,100,516). Applicants respectfully traverse this ground of rejection since a combination of references may not be made using a rejection under 35 U.S.C. Section 102, as a single reference must anticipate each and every recitation made in each claim rejected under this section. Applicants respectfully request that this ground of rejection be withdrawn as being clearly inappropriate.

With regard to Zorabedian et al. (U. S. Patent No. 6,526,071), the Examiner asserted, as to claims 1, 24, 31 and 37 : "Zorabedian '071 shows a laser apparatus comprising a gain medium, a wavelength selecting element, and non-reciprocal pickoff position positioned in said light beam and pick-off a portion of light returning from tuning means, and light feedback to the gain medium.". Applicants respectfully traverse this position, particularly in view of the further definition of non-reciprocal pickoff provided in the claims. Zorabedian et al. does not disclose or suggest picking off a portion of returned spectrally cleaned light and outputting that portion along an output path different from the optical path of the external laser cavity. Rather, the "non-reciprocal element" that Zorabedian et al. refers to at column 9, lines 5-9 refers to an optic coupler 270 (with lenses 272-274) and a feedback blocker 276. There is no picking off of spectrally clean light , but only an optical isolator that only

transmits a forward light and blocks any light that may return back from any external reflection or feedback of the forward light beam.

Further, note that the optical coupler 270 and feedback blocker (referred to as “non-reciprocal element) 276 are located outside of the external cavity, which is bounded by rear facet 204 of gain medium 202 and retroreflector 222 (see column 5, lines 27-29). Since the non-reciprocal pickoff (or non-reciprocal picking off) referred to in claims 1, 24, 31 and 37 is recited as being (or occurring) between a wavelength selection element and the reflector, or between the gain medium and the wavelength selection element, or before the wavelength selection element, then feedback blocker 276 clearly fails to meet or suggest these limitations. Thus, not only does feedback blocker 276 or optical coupler 270 not perform as a non-reciprocal pickoff as recited, it is also not located where the non-reciprocal pickoff is defined as being located. For these reasons, it is respectfully submitted that Zorabedian et al. clearly fails to anticipate or suggest any of claims 1-6, 8-11, 24-27, 31-32 and 37-38, since the remainder of the rejected claims depend from claims 1, 24, 31 and 37.

The Examiner further cited Goodwin et al. or Nerin et al. as disclosing the user of a beam splitter to pickoff a portion of the beam to direct the beam along a different path different from the optical path. The Examiner asserted that it would have been obvious to provide Zorabedian et al. with the element as taught or suggested by Goodwin et al. or Nerin et al. for the benefit of having a reflector directing resonating beam into another direction for detection or feedback calculation.

Initially, Applicants would again point out that it is improper to combine secondary references with a base reference when formulating a rejection under 35 U.S.C. Section 102. Accordingly, this ground of rejection should be withdrawn as being improper. Further, Applicants note that the polarizing beam splitter 104 of Goodwin et al. is not located in a laser cavity, or between a wavelength selection element and the reflector, or between the gain medium and the wavelength selection element, or before the wavelength selection element, in contrast to the non-reciprocal pickoff recited in Applicants’ claims, but rather is external to the laser, as is clearly shown in Fig. 3. Clearly, any light returning from the target 112 is not spectrally clean light and the return light is polarized to match polarity of the source beam and is then coherently mixed to generate an optical interference pattern, see column 10, lines 42-45. Goodwin et al. clearly does not output the light returning from the target as spectrally clean laser output, since the light returning is not spectrally clean and further since Goodwin et al. combines the returning light with the local oscillator beam to form interference patterns.

Nor does Nerin et al. disclose or suggest the provision of a beam splitter located between a wavelength selection element and the reflector, or between the gain medium and the wavelength

selection element, or before the wavelength selection element. Rather, Nerin et al. discloses a velocity measurement device having two subassemblies. The first subassembly is the emission part and the second subassembly is the reception part. The emission subassembly includes a cavity 13 having two quality factors obtained by using mirrors of different reflectivities (M1, M2 and M3). The amplifying medium can be that of a microlaser which permits the use of simple optics for collimating it which, Nerin et al. notes, is impossible with a laser diode (see column 3, lines 45-50. Beamsplitter 14 samples a reference beam 11 on the emitted beam 4 and delivers it to photodetection means 16.

It is respectfully submitted that the arrangement of Nerin et al. is clearly not combinable with Zorabedian et al., since Zorabedian et al. employs a laser diode (see column 9, line 11) and because Nerin et al. states that the arrangement described therein is not possible to use with a laser diode. Further, since Nerin et al. does not employ a tunable element, any suggestion of where to employ the beamsplitter element would not be suggested by either reference, but would be completely speculative. Still further, Nerin et al. does not teach to use the beamsplitter to pick off a portion of spectrally clean light returning from a reflector. Rather, the light returning from the reflector is combined with that sampled directly from the emitted beam. Therefore, Nerin et al. clearly does not teach or suggest picking off a portion of spectrally clean light returning from a reflector and outputting that portion as spectrally clean laser output. To the contrary, Nerin et al. combines beams in an effort to measure velocity.

The present invention allows spectrally clean light coming back from the reflector to be picked off as the desired laser output with low noise and high power. None of the references, whether taken alone or in any proper combination, discloses, teaches or suggest these features.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 1-6, 8-11, 24-27, 31-32 and 37-38 under 35 U.S.C. Section 102(a) as being unpatentable over Zorabedian et al. (U.S. Patent No. 6,526,071 (Application Serial No. 60/152,042)) in view of Goodwin et al. (U.S. Patent No. 5,114,226) or Nerin et al. (U.S. Patent No. 6,100,516), as being clearly inappropriate.

Claims 7, 12-22, 23, 28, 30 and 33-36 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Zorabedian et al. in view of Goodwin et al. and Ershov (U.S. Patent No. 5,917,849). It is respectfully submitted that these claims are allowable over the combination applied for the same reason provided above with regard to the rejection over Zorabedian et al. solely, or Zorabedian et al. in view of Goodwin et al., since Ershov does nothing to overcome the defects of Zorabedian et al. and Goodwin et al. in that Zorabedian et al. and Goodwin et al. taken either alone or in any proper

combination, lack the disclosure or suggestion of a non-reciprocal pickoff as recited, which outputs spectrally clean laser as a resultant output. Although Ershov discloses the use of a polarizing beam splitter 22, this beam splitter does not function as a non-reciprocal pickoff, but is used to amplify and narrow the bandwidth of the light as it is resupplied along the optical path of the laser. Accordingly, there is no suggestion or teaching by Ershov that would have lead one of ordinary skill in the art to provide Zorabedian et al. with a non-reciprocal pickoff as claimed.

In view of the above remarks, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 7, 12-22, 23, 28, 30 and 33-36 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Zorabedian et al. in view of Goodwin et al. and Ershov (U.S. Patent No. 5,917,849) as being inappropriate.

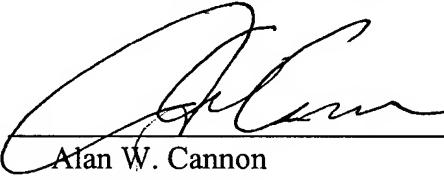
Conclusion

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-2653, order number NUFO-011.

Respectfully submitted,
LAW OFFICE OF ALAN W. CANNON

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